

REMARKS**Summary of the Office Action**

Claims 10-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,373,619 to Fleischhacker ("Fleischhacker") in view of U.S. Patent No. 5,653,696 to Shiber ("Shiber").

Summary of the Response to the Office Action

Claims 10, 11, 13, and 14 are pending for consideration. Claim 11 has been amended to correct a missing antecedent basis. Claims 1-9 and 12 have been cancelled. New claims 13 and 14 have been added.

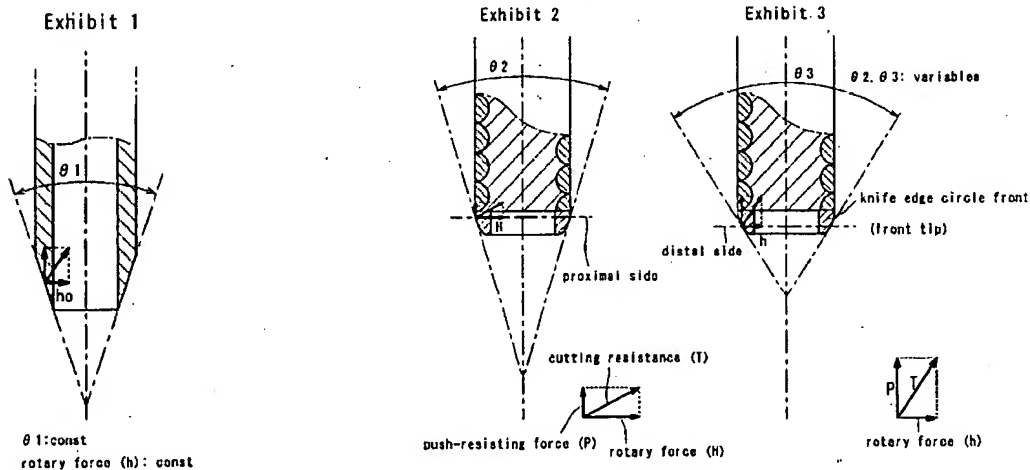
The Rejections under 35 U.S.C. § 103(a)

Claims 10-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fleischhacker in view of Shiber. Applicants respectfully traverse the rejection.

Fleischhacker does not disclose or suggest "electrical currents drawn to said austenitic stainless steel wires to be heated by an electric resistance of said austenitic stainless steel wires..." as recited in claim 10. The Office Action states that "[p]roduct-by-process claims are not limited to the manipulations of the recited steps, only to the product implied by the steps" and then suggests that the mere fact that "the wires [of Fleischhacker] are capable of having resisting electric current causing the wires to heat" meets the requirement recited in claim 10 of actually heating the wires. The electrical heat resistor removes the residual stresses from the working process. The reason the austenitic stainless steel wires are heated is that the martensitic

stainless steel exhibits a quench-hardened property, and the ferritic stainless steel exhibits a brittleness at 450 C. Thus, the step of heating the wires results in a different product than that disclosed or suggested by Fleischhacker, which does not mention stress relief at all.

The Office Action again asserts that tubular blades 22 and 102 of Shiber have an outwardly arcuated in cross section blade edge as recited in claim 10. Blade 22 of Shiber has a cutting edge 22' sharpened along its internal diameter or a cutting edge 22'' sharpened along its outside diameter. (col. 4, lines 26-34; Fig. 6). Both cutting edges 22' and 22'' form a directly tapered blade which does not meet the requirements of claim 10 that of "knife-edge circle front being outwardly arcuated in cross section." Forming the blade edge as claimed makes it easier to maintain the strength of the blade edge even when the knife-edge circle front is diametrically thinned. Exhibit 1 below shows the cutting edge of Shiber. Exhibits 2 and 3 below show the blade edge of the knife-edge circle front outwardly arcuated in cross section as recited in claim 10.



Exhibits 1-3 show a relationship between distal angles θ_1 , θ_2 , and θ_3 of the knife edge circle front and rotary forces (h , H) to which the blade edges are subjected when operating the flexible hollow tube body. Decreasing distal angle θ_1 in Exhibit 1 (Shiber) increases rotary force H to which the blade edge is subjected. Increasing the distal angle θ_2 shown in Exhibit 2 to the distal angle θ_3 shown in Exhibit 3 decreases rotary force h to which the blade edge is subjected. In other words, the distal angle θ_1 of Shiber remains constant while distal angles θ_2/θ_3 of the present invention increase progressively approaching forward. This results in the proximal side rotary force H being greater than the distal side rotary force h . The constant distal angle θ_1 of Shiber cannot insure that the proximal side rotary force H is greater than the distal side rotary force h .

As shown in Figs. 2, 5 et al., the flexible rotary catheter 21 of Shiber has no inner wall formed by the austenitic stainless steel wires helically and tightly stranded adjacent to each other as recited in claim 10. As explained in col. 8, lines 53-56, and shown in Fig. 24, element 101 of Shiber is an open coil flat wire spring that has a helical clearance between the helices of the open coil flat wire spring 101. Thus, Shiber has no helical inner wall corresponding to the helical grooves 30 defined at the inner surface of the flexible tube body and as recited in claim 10.

The absence in Shiber of the flexible tube body as recited in claim 10 can result in hard clot powder dropping off through the clearances between the helices of open coil flat wire spring 101 so that it would not carry the powder away in the rearward direction as the catheter is rotated.

Fleischhacker relates to a method of making a hollow lumen cable in which the cable is formed by helically winding inner and outer coils with the helices of each coil being in an abutting relationship and the outer coil inner diameter being less than the outer peripheral diameter of the inner coil. Thus, Fleischhacker discloses no structure corresponding to the “rigid-flexible gradient structure flexible in the front end portion and rigid in the rear end portion” recited in claim 11.

For at least the above reasons, Applicants respectfully request that the rejection of claims 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Fleischhacker in view of Shiber be withdrawn.

New Claims

New claims 13 and 14 have been added. Claim 13 includes all features of claim 11, and also a feature of the outside surface of the wires making up the flexible hollow tube being smooth. This feature is not disclosed or suggested in either Fleischhacker or Shiber. For at least this additional reason, Applicants respectfully assert that claims 13 and 14 are in condition for allowance.

Applicants respectfully submit that claims 10, 11, 13, and 14 are in condition for allowance. Early allowance of claims 10, 11, 13, and 14 is earnestly solicited.

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

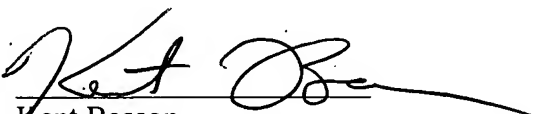
If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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Dated: June 20, 2008

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